UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/814,294	04/01/2004	Paul Thurk	040897-0114	6127

7590 05/04/2006

Stephen B. Maebius
Foley & Lardner LLP
Washington Harbour
3000 K Street, N.W., Suite 500
Washington, DC 20007-5143

EXAMINER	
WON, BUMSUK	

ART UNIT	PAPER NUMBER
2879	

DATE MAILED: 05/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/814,294	THURK, PAUL	
	Examiner	Art Unit	
	Bumsuk Won	2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 February 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *13-16,18,19,22,23,30,32-40,42-46 and 52-66* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *13-16,18,19,22,23,30,32-40,42-46 and 52-66* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claim 40 is rejected under 35 U.S.C. 102(e) as being anticipated by Korgel (US 6,918,946).

Korgel discloses a light-emitting device (figure 5) comprising: nanoparticles (58) which comprises a group IV semiconductor and a capping agent coupled to the group IV semiconductor (paragraph 10), wherein the nanoparticles have an average diameter of between about 0.5 nm to about 15 nm (paragraph 10); and a first electrode (54) and a second electrode (56) electrically coupled to the nanoparticles; wherein the first and the second electrodes together are configured to conduct an applied current to the nanoparticles (paragraph 30), wherein the nanoparticles produce light in response to the applied current (paragraph 30). "Ceiling tile" in the preamble is an intended use language and does not differentiate from the device disclosed by Korgel, therefore, no patentable weight is given (MPEP 2111).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 13-16, 19, 22, 23, 30, 32-34, 36, 38, 42-46 and 52-66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mikhael (US 2003/0080677) in view of Korgel (US 6,918,946).

5. Regarding claim 13, Mikhael discloses a light-emitting device (figure 2) comprising a substrate (46) and a planar light-emitting subassembly (other items) shaped like the substrate (shape of 46 is a flat tube while other items' shape is a flat tube) and disposed on the substrate in a laminar arrangement (figure 2), wherein the substrate comprises two opposing flat faces and a perimeter (46 has top and bottom flat faces and perimeter), and the light-emitting subassembly comprises two opposing flat faces and a perimeter (other items have top and bottom flat faces and perimeter). Mikhael also discloses the light-emitting device is used as light source for ceiling (paragraph 14).

Mikhael does not disclose the subassembly comprising light-emitting group IV nanoparticles.

Korgel discloses a light-emitting device (figure 5) comprising light-emitting group IV nanoparticles (paragraph 139), for the purpose of emitting visible light (paragraph 139).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have light-emitting group IV nanoparticles disclosed by Korgel in the light-emitting device disclosed by Mikhael, for the purpose of emitting visible light.

Regarding claim 14, Mikhael discloses a first electrical insulation layer (44), upon which is disposed a first electrode layer (42), upon which is disposed a light emitting layer (48, 50), upon which is disposed a second electrode (52), upon which is disposed a second electrical insulation layer (56).

Mikhael does not disclose the light-emitting layer comprises light-emitting group IV nanoparticles.

Korgel discloses a light-emitting device (figure 5) comprising a light-emitting layer (58) having light-emitting group IV nanoparticles (paragraph 139), for the purpose of emitting visible light (paragraph 139). The reason for combining is the same as for claim 13 above.

Regarding claim 15, Mikhael discloses the first electrical insulation layer and the first electrode layer are substantially transparent to the light emitted by the light-emitting layer (paragraph 26).

Regarding claim 16, Mikhael discloses the light-emitting device is adapted to provide contact (figure 2, 58) with a voltage source (paragraph 26).

Regarding claim 19, Mikhael discloses an electron transport layer (50) and a hole transport layer (48).

Regarding claims 22, 23, 52, 53 and 54, Korgel discloses the group IV nanoparticles are core-shell nanoparticles comprising silicon (paragraph 105). The reason for combining is the same as for claim 13 above.

Regarding claim 30, Korgel discloses white light is emitted using the nanoparticle (paragraph 141). The reason for combining is the same as for claim 13 above.

Regarding claims 43-46, use of the light-emitting device for emergency lighting (claim 43), in-door lighting (claim 44), track lighting (claim 45) and direct lighting of an airplane interior (claim 46) are intended use language, and does not differentiate from structure of the light-emitting device disclosed by Mikhael in view of Korgel, therefore, no patentable weight is given to these claims.

Regarding claim 55, Korgel discloses the group IV nanoparticles are Ge nanoparticles (paragraph 126). The reason for combining is the same as for claim 13 above.

Regarding claim 56, Korgel discloses the group IV nanoparticles are Si-Ge alloy nanoparticles (paragraph 118). The reason for combining is the same as for claim 13 above.

6. Regarding claim 32, Mikhael discloses a light-emitting subassembly (figure 2) comprising a first electrode layer (42), a light-emitting layer (48, 50), and a second electrode layer (52), wherein the subassembly comprises two opposing faces and a perimeter edge (top and bottom surfaces and vertical edges), and wherein the first electrode is transparent to the light emitted by the light-emitting layer (paragraph 26). Mikhael also discloses the light-emitting device is used as light source for ceiling (paragraph 14).

Mikhael does not disclose the subassembly comprising light-emitting group IV nanoparticles.

Korgel discloses a light-emitting device (figure 5) comprising light-emitting group IV nanoparticles (paragraph 139), for the purpose of emitting visible light (paragraph 139).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have light-emitting group IV nanoparticles disclosed by Korgel in the light-emitting device disclosed by Mikhael, for the purpose of emitting visible light.

Regarding claim 33, Mikhael discloses the light-emitting device is adapted to provide contact (figure 2, 58) with a voltage source (paragraph 26).

Regarding claim 34, Korgel discloses the nanostructures are nanoparticles (paragraph 139). The reason for combining is the same as for claim 32 above.

Regarding claims 36 and 38, Mikhael discloses an electron transport layer (50) and a hole transport layer (48).

Regarding claims 57, 60 and 61, Korgel discloses the group IV nanoparticles are core-shell nanoparticles comprising silicon (paragraph 105). The reason for combining is the same as for claim 32 above.

Regarding claim 58, Korgel discloses the group IV nanoparticles are Ge nanoparticles (paragraph 126). The reason for combining is the same as for claim 32 above.

Regarding claim 59, Korgel discloses the group IV nanoparticles are Si-Ge alloy nanoparticles (paragraph 118). The reason for combining is the same as for claim 32 above.

7. Regarding claim 42, Mikhael discloses a method of making a light-emitting subassembly (figure 2) combining a light-emitting layer (48, 50), first and second electrode layers (42, 52), and first and second electrical insulation layers (44, 56), wherein the layers are in laminar arrangement (figure 5), wherein the first electrode is disposed on the first electrical insulation layer, and the first and the first electrical insulation layer are transparent (paragraph 26).

Mikhael does not disclose the light-emitting layer comprising light-emitting group IV nanoparticles.

Korgel discloses a light-emitting layer (figure 5, 58) comprising light-emitting group IV nanoparticles (paragraph 139), for the purpose of emitting visible light (paragraph 139).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have light-emitting group IV nanoparticles in a light-emitting layer disclosed by Korgel in the method of making a light-emitting subassembly disclosed by Mikhael, for the purpose of emitting visible light.

Regarding claims 62, 65 and 66, Korgel discloses the group IV nanoparticles are core-shell nanoparticles comprising silicon (paragraph 105). The reason for combining is the same as for claim 42 above.

Regarding claim 63, Korgel discloses the group IV nanoparticles are Ge nanoparticles (paragraph 126). The reason for combining is the same as for claim 42 above.

Regarding claim 64, Korgel discloses the group IV nanoparticles are Si-Ge alloy nanoparticles (paragraph 118). The reason for combining is the same as for claim 42 above.

8. Claims 18, 35, 37 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mikhael (US 2003/0080677) in view of Korgel (US 6,918,946), in further view of Forrest (US 2004/0031966).

Mikhael in view of Korgel does not disclose a reflective layer.

Forrest discloses a light-emitting device (figure 1) having a reflective layer (160), for the purpose of emitting light in one direction.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a reflective layer disclosed by Forrest in the light-emitting device disclosed by Mikhael in view of Korgel, for the purpose of emitting light in one direction.

Response to Amendment

The amendment filed on 2/13/2006 has been entered.

Response to Arguments

Applicant's arguments with respect to claims 13-16, 18, 19, 22, 23, 30, 32-40, 42-46 have been considered but are moot in view of the new ground(s) of rejection.

Contact information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bumsuk Won whose telephone number is 571-272-2713. The examiner can normally be reached on Monday through Friday, 8:00 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar Patel can be reached on 571-272-2457. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Bumsuk Won
Patent Examiner

JOSEPH WILLIAMS
PRIMARY EXAMINER